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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,771	10/29/2003	Supratik Guha	YOR920030416US1	7919
7590 04/07/2006			EXAMINER	
Moser, Patterson & Sheridan Suite 100 595 Shrewsbury Avenue Shrewsbury, NJ 07702			TRAN, BINH X	
			ART UNIT	PAPER NUMBER
			1765	

DATE MAILED: 04/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/696,771

Applicant(s)

GUHA ET AL.

Examiner

Binh X. Tran

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 January 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) 18-34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-34 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10-12-04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I (claims 1-17) in the reply filed on 1-17-2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 18-34 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 1-17-2006.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-2, 4-6, 8-9, 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Durig (US 6,084,849).

Respect to claim 1, Durig discloses a method for chemical fabricating or altering a sub-micro-structure on an object, comprising:

providing a heating means (21 and 22) proximate to a local region of the object
(See Fig 3A-3C, Fig 4A-4B);

selectively heating the local region using the heating means to facilitate in the local region a local chemical reaction for altering a submicrostructure on the local region (col. 5 lines 1-55).

Respect to claim 2, Durig discloses the local region is provided with a reactant (i.e. SMA layer). Respect to claim 4, Durig discloses the chemical reactions effects removing material from the object (See Fig 3A-3B). Respect to claim 5, Durig discloses the heating means is adapted to a first end of the cantilever (22), wherein the cantilever has a second end coupled to a device for position the heating means (See Fig 3A-3C, col. 5 lines 17-31, col. 6). Respect to claim 6, Durig discloses the heating means is a thermal transducer. Respect to claims 8-9, Durig teaches to use lubricant between the heating means and the local region (col. 5 lines 48-60). Respect to claim 16, Durig discloses the submicrostructure is an information-containing portion of the recording medium (abstract).

5. Claims 1-2, 4-6, 8-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Binnig et al. (US 6,218,086).

Respect to claim 1, Binnig discloses a method for chemical fabricating or altering a sub-micro-structure on an object, comprising:

providing a heating means (1 and 2) proximate to a local region of the object ;

selectively heating the local region using the heating means to facilitate in the local region a local chemical reaction for altering a submicrostructure on the local region (4) (See col. 4, col. 6).

Respect to claim 2, Binnig discloses the local region is provided with a reactant (i.e. PMMA layer 3). Respect to claim 4, Binnig discloses the chemical reactions effects removing material from the object (See Fig 1-2, Fig 5b-5c). Respect to claim 5, Binnig discloses the heating means is adapted to a first end of the cantilever (2), wherein the cantilever has a second end coupled to a device for position the heating means (col. 4 lines 1-15).). Respect to claim 6, Binnig discloses the heating means is a thermal transducer. Respect to claims 8-9, Binnig teaches the heat-conductive medium is a reactant (layer 3) (See col. 4). Respect to claim 10, Binnig discloses the sub-micro-structures is a feature of a lithographic reticle or a mask (i.e. resist mask) formed on the substrate (5) (See Fig 5a-5c, col. 6, read on applicant's limitation "defect eliminating feature"). Respect to claim 11, Binnig discloses etching a film in an opaque region (See Fig 5a-5c, col. 6).

6. Claims 1-2, 4, 6, 8-9, 12-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Yu (6,291,302).

Respect to claim 1, Yu discloses a method for chemical fabricating or altering a sub-micro-structure on an object, comprising:

providing a heating means (laser) proximate to a local region of the object;

selectively heating the local region using the heating means to facilitate in the local region a local chemical reaction for forming or altering a submicrostructure on the local region (i.e. activating the dopant in the source/drain region; See col.4 -5).

Respect to claims 2, Yu discloses the local region is provided with a dopant for chemical reaction. Respect to claim 4, Jacobson discloses the chemical reactions effects at least one of depositing process to form local features (implanting or activating dopants in source/drain region; See col. 5 lines 5-23). Respect to claim 6, Yu discloses the heater is a laser beam (read on nanoheater or thermal transducer, See col. 5). Respect to claims 8-9, Yu teaches the heat-conductive medium is a reactant (dopant and/or source/drain material) (See col. 4-5). Respect to claims 12-14, Yu discloses that submicrostructure is a portion of an integrated circuit (IC) including a gate stack (16) (read on "a line" limitation in claim 13), or a field effect transistor (abstract). Respect to claim 15, Yu discloses the chemical reaction is at least one of the reactions forming source and drains regions or gate stack (col. 4 lines 20-26, col. 5 lines 5-23).

7. Claims 1-4, 6, 8-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Jacobson et al. (US 2004/0033679 A1).

Respect to claim 1, Jacobson discloses a method for chemical fabricating or altering a sub-micro-structure on an object, comprising:

providing a heating means (620 or 710, or 810) proximate to a local region of the object (See Fig 6-8, paragraph 0074-0077);

selectively heating the local region using the heating means to facilitate in the local region a local chemical reaction for forming or altering a submicrostructure on the local region (i.e. forming feature 670 or 730 or 830; See paragraph 0073-0075).

Respect to claims 2-3, Jacobson discloses the local region is provided with a gaseous phase reactants (i.e. hydrocarbon vapor 630). Respect to claim 4, Jacobson discloses the chemical reactions effects at least one of depositing process to form local features (i.e. feature 670, 730 or 830). Respect to claim 6, Jacobson discloses the heater is electron beam or focused ion beam (FIB) (read on nanoheater or thermal transducer, See paragraph 0077). Respect to claims 8-9, Jacobson teaches the heat-conductive medium is a reactant (paragraph 0077)

8. Claims 1-2, 4, 6, 8-9, 16-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Field (US 2003/0222965 A1).

Respect to claim 1, Field discloses a method for chemical fabricating or altering a sub-micro-structure on an object, comprising:

providing a heating means (laser beam) proximate to a local region of the object;
selectively heating the local region using the heating means to facilitate in the local region a local chemical reaction for altering a submicrostructure on the local region (i.e. marking, See paragraph 0022-0023).

Respect to claim 2, Field discloses the local region is provided with a reactant (i.e. curable material). Respect to claim 4, Field discloses the chemical reactions effects removing material from the object to create marking on the medium. Respect to claim 6, Filed discloses the heater is a 780 nm laser or 531 nm laser (read on

nanoheater or thermal transducer, See paragraph 0024, 0028). Respect to claims 8-9, Field teaches the heat-conductive medium is a reactant (polymer layer or curable material) (paragraph 0021). Respect to claims 16-17, Field discloses the submicrostructure is an information-containing portion of the recording medium including DVD or compact recording disks (paragraph 0015).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Durig et al. in view of Albrecht et al. (US 5,537,372).

Respect to claim 7, Durig fails to teach the heat-emitting surface of the thermal transducer has topographic dimensions in a range of about 10-200 nm. However, Durig

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clearly teaches to use a thermal transducer having a tip surface (See Fig 3A). Albrecht teaches to use a tip size having a dimension of 100 angstroms (100 angstrom = 10 nm; See col. 6 lines 26-30, Fig 1). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Durig in view of Albrecht by having the dimension as discussed above because it will increase the density data for the storage medium.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Binh X. Tran whose telephone number is (571) 272-1469. The examiner can normally be reached on Monday-Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Binh Tran

Binh X. Tran